

REMARKS

The Office Action of October 9, 2008, and the prior art recited therein have been carefully studied. Claims 1-22 and 24-40 remain pending in the present application. Other than claim 24, claim 1 is sole independent claim. Claims 2, 3, 21-24 and 38-40 have been withdrawn from consideration by the Examiner. The claims define patentable subject matter and should be allowed. Favorable reconsideration of the pending claims and such allowance are respectfully urged.

Applicant respectfully notes from the Office Action Summary at paragraph 10 indicates that the drawings have been accepted by the Examiner.

Applicant also notes with appreciation the Examiner's acknowledgement that the March 28, 2006 Information Disclosure Statement (IDS) has been received by the U.S.P.T.O.

Claim 24 has been re-drafted in independent form. As it is directed to the elected subject matter, Applicant requests that it be examined.

New claim 41 finds support at page 5, lines 1-3, and page 4, lines 16-18 of the Specification, and is patentable at least because it depends from and incorporates the subject matter of claim 1.

Claims 1 and 29-30 are objected to because of the following informalities: the word "pyrolelectric" in claim 1 and the word "filed" at line 4 in claims 29 and 30 are misspelled. Applicant notes this objection and has amended claims 1 and 29-30 to address this objection. Withdrawal of this objection is therefore respectfully requested.

Claims 1, 4, 15, 18, 25, 26, 29, 30, 36 and 37 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. 4,601,883 (hereinafter “Sekido”); claims 1, 4-6, 8, 9, 11, 12, 15, 17-20, 25-30, 36 and 37 were rejected under 35 U.S.C. § 102(a/e) as being anticipated by U.S. 2002/0117647 (hereinafter “Roeder”); claims 1, 4-6, 8, 9, 11, 12, 14-20, 25-27, 29-30, 36 and 37 were rejected under 35 U.S.C. § 102(a/e) as being anticipated by U.S. 2002/0177008 (hereinafter “Shirakawa”). Applicant respectfully traverses these rejections for reasons detailed below.

The present application provides a novel quasi-amorphous pyroelectric compound and a device including such compound by subjecting an amorphous compound to a controlled mechanical strain, where the mechanical strain does not promote the formation of crystallites within the resultant quasi-amorphous compound. One of ordinary skill in the art would understand that the term “quasi-amorphous compound” in claim 1 should be construed as a compound which is a non-crystalline ionic solid having a macroscopic polarization.

Sekido as well as Roeder do not disclose any amorphous compound or structure, but rather disclose crystalline structures. Shirakawa discloses the formation of thin films of completely amorphous BaTiO₃ and of SrTiO₃ (Shirakawa, paragraphs [0130-0131]). However, after a heat treatment of such films, the x-ray diffraction analysis shows existence of perovskite structures. Since one of ordinary skill in the art would understand that a perovskite structure is a crystalline structure, Applicant respectfully submits that Sekido, Roeder and Shirakawa all do not disclose a “quasi-amorphous compound” (i.e. non crystalline structure), as recited in claim 1.

Withdrawal of the rejection is in order, and is respectfully requested.

Claims 1, 4-13, 15, 17-20, 25-30, and 36-37 were also rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious from U.S. 5,472,777 (hereinafter “Kineri”).

Kineri teaches a nonlinear optical thin film in which fine particles of a metal are uniformly dispersed in a thin film-shaped ferroelectric or highly dielectric matrix having a high dielectric constant “ ϵ ”. The value of the dielectric constant is at least 10. Although the matrix is amorphous as deposited, crystallographic change occurs due to recrystallization of the matrix in liquid or solid phase during a heat treatment. (Kineri, column 3 lines 3-9). The crystalline structure is necessary in Kineri, and therefore a must, in order to form a desired structure. Therefore, Kineri also does not teach or disclose about any inorganic amorphous compound, as recited in claim 1, and one of ordinary skill in the art would not learn from Kineri that by applying a mechanical strain on an inorganic compound the crystallization of the compound can be prevented.

Withdrawal of the rejection is in order, and is respectfully requested.

Claims 31-35 were also rejected under U.S.C. § 103(a) as being obvious from any of Sekido, Roeder, Shirakawa or Kineri.¹ These rejections are respectfully traversed.

As discussed above, Sekido, Roeder, Shirakawa, and Kineri, whether considered independently or combined, all do not disclose or teach a non-crystalline film, as recited in claim 1. There is nothing in these documents which would have led the person of

¹ § 103 comes into effect only if § 102 does not apply. Therefore, the rejections under § 102 and § 103 are inconsistent.

ordinary skill in the art to make the changes necessary to reach any of applicant's claims, and no reason to even try to do so.

In addition, Applicant submits that it cannot be learned from any combination of the above cited references in the Office Action about how the mechanical strain has to be applied to prevent crystallization of the amorphous compound, thereby obtaining highly stressed amorphous films.

Further, Applicant submits that all the above references deal with the conventional approach for piezo- and pyro-electric structures, which are crystalline structures, whereas the present application takes an alternative approach, which led to piezo- and pyro-electric properties in a non-crystalline structures. This is achieved by providing an inorganic, quasi-amorphous oxide compound of a metal, mixture of metals or semiconducting element. It follows that the techniques of the above references are not in common with the present application.

Withdrawal of the rejection is in order, and is respectfully requested.

As such, Applicant submits that claim 1 is allowable over Sekido, Roeder, Shirakawa or Kineri. Accordingly, claims 4-6, 8-9, 11-12, 14-20, and 25-37 are also allowable by virtue of their dependency from claim 1 and features recited therein. Withdrawal of the rejections under 35 U.S.C. §§ 102 and 103 is therefore respectfully requested.

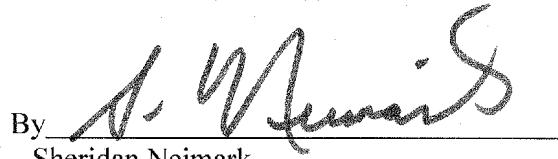
In view of the above amendment and remarks, Applicant respectfully requests withdrawal of the outstanding rejections of record. Applicant submits that the application is in condition for allowance and early notice to this effect is most earnestly solicited.

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If the Examiner has any questions, he is invited to contact the undersigned at
202-628-5197.

Respectfully submitted,

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